

State of Hawai'i
DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of Aquatic Resources
Honolulu, Hawai'i 96813

May 25, 2007

Board of Land
and Natural Resources
Honolulu, Hawai'i

REQUEST FOR AUTHORIZATION AND APPROVAL TO ISSUE A
PAPAHĀNAUMOKUĀKEA MARINE NATIONAL MONUMENT RESEARCH
PERMIT TO DR. GEORGE ANTONELIS, NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION (NOAA), PACIFIC ISLANDS FISHERIES
SCIENCE CENTER (PIFSC) FOR ACCESS TO STATE WATERS TO
CONDUCT SHARK CONTROL ACTIVITIES.

The Division of Aquatic Resources (DAR) hereby submits a request for your authorization and approval for issuance of a Papahānaumokuākea Marine National Monument Research Permit to Dr. George Antonelis, NOAA/PISFC, pursuant to chapter 13-60.5, *Hawaii Administrative Rules*, and § 187A-6, *Hawaii Revised Statutes*, and all other applicable laws and regulations. The Research Permit application, described below, proposes activity from June 15, 2007 through September 5, 2007 in the NWHI State Marine Refuge (0-3 miles), in waters surrounding French Frigate Shoals (Mokupāpapa), to conduct lethal shark control activities.

INTENDED ACTIVITIES

The proposed activities will include monitoring of shark activity at sites where predation is detected or suspected, and lethal removal of up to ten (10) Galapagos sharks using a variation of bottom longline gear, single hook drumlines set from small boats, and spearing or harpooning from shore.

PROCEDURES

1. Time scan sampling: standardized observations and collection of quantitative and behavioral data on shark activities at Trig Island.
2. Overnight camping to observe shark activities during crepuscular periods.
3. Trig Island monitoring: daily or near-daily visits to detect injured and missing monk seal pups, and/or increased shark activity.
4. Shark monitoring: observations from small boats to document presence of monk seals, turtles and sharks in the area.
5. Shark fishing: removals of sharks will occur primarily at those area identified or suspected of having the greatest likelihood of catching Galapagos sharks. Sites

- include reef channels surrounding Trig Island, channels between Tern and Trig Islands, and nearshore waters surrounding Round Island.
6. Fishing Gear and Method: the primary gear will be a bottom-set longline roughly 100 feet in length deployed at <60 feet of depth, with 5 hooks per longline. There will be deployed by hand from small boats and left to soak overnight. During the daylight hours, the gear will be checked at least every four hours. The gear will be buoyed at both ends and anchored to the seabed using an anchor suitable for substrate type.
 7. Secondary Fishing Gear/Methods: single hooks/rigs utilizing a 'drumline'. A drumline uses a large buoy, with a chain trace attached to it and a single baited circle hook suspended approximately 10 ft above the sea floor. A groundline is shackled to the drum with a swivel and then attached to a Danforth or CQR anchor and anchored to the bottom substrate. Additional methods may be employed as necessary and include: a single hook deployed from shore, spear gun shot from shore, or harpoon gun shot from shore.
 8. Post-catch procedures: sharks will be killed using a .44 caliber bang stick, and the carcass taken to Tern Island for necropsy.
 9. Native Hawaiian practices: Hawaiian cultural protocols based on extensive practitioner input will be included in all shark removal efforts.
 10. Non-target species: Any non-target species remaining alive at the time of gear retrieval will be released immediately.

REVIEW PROCESS:

The permit was sent out for review and comment to the following entities: Division of Aquatic Resources staff, Papahānaumokuākea Marine National Monument staff, NOAA Pacific Islands Regional Office (NOAA-PIRO), and United States Fish and Wildlife Service, the Office of Hawaiian Affairs (OHA), and the Kaho'olawe Island Reserve Commission (KIRC). At the request of OHA, two additional members of the Native Hawaiian community were also consulted.

Comments from the scientific community are summarized as follows:

The majority of the reviewers from the scientific community, including representatives from two of the three co-trustee agencies recommended **denying** this permit application based on the following concerns:

- The proposed activity is at odds with the ecological integrity, overall purposes and goals of the Papahānaumokuākea Marine National Monument. Essential information is lacking on the dynamics of shark/pup predation to ensure that such removal has any long-lasting benefit. Before outright culling of sharks is undertaken more information is needed on the movement patterns of the sharks and their predatory interaction with the seals. The applicant provided insufficient thought and effort toward researching alternate, non-destructive methods of reducing shark predation on the seal pups. This might include such activities as

tag/release and/or relocation. Other approaches to reduce mortality must be thoroughly investigated before wholesale shark removal should be considered.

- The project is not consistent with the goal of management based on sound science. The beneficial effect of killing a few Galapagos sharks has not been demonstrated in any statistically defensible manner to date.
- There is no evidence that this management tool has been effective in reducing predation by Galapagos sharks on Hawaiian monk seals.
- No evidence is provided to indicate either that only a few sharks are involved or that they are persistent in the areas of concern. The proposal lacks clear evidence that these methods will be a satisfactory remedy to pup mortality. Little thought or effort seems to have been put into alternative methods even given the evidence that harassment has previously worked in reducing mortality.
- The activity does not provide adequate safeguards for the environment. Setting a line in 60 feet of water and leaving it unattended for periods of 12 hours brings inherent risks of damage to coral reef habitat, entanglement of marine animals, and mortality of bycatch species including large ulua, sea turtles, and even monk seals.
- The activity proposed is to remove “predatory” Galapagos sharks and rests on the assumption that there are a “small number of persistent predators” among the entire Galapagos shark population at FFS that have adopted the behavior of killing seal pups. The proposal implies that the target of their fishing efforts are the “predatory sharks but the actual goal appears to be to reduce density of Galapagos sharks in the area using a non-discriminatory fishing method in which individual sharks are not identified.
- The proposal has very little research value. The method of killing sharks proposed (unattended baited hooks on the bottom) has inherent risks to individuals of the population they are trying to protect, Hawaiian monk seals.
- The proposal does not address the very real concern that some of the many Hawaiian monk seals using the area proposed for setting the hooks will not be caught and drowned taking the baits. The killing of an adult monk seal would be a much greater cost than the negligible benefit of killing a few random Galapagos sharks.

Comments from the Native Hawaiian community are summarized as follows:

OHA indicated that the applicant has met with Native Hawaiian practitioners several times to discuss cultural protocols, and has made a considerable effort to address subsequent concerns and requests. Additionally, the applicant has followed the Cultural Working Group’s request to include a Native Hawaiian on the Monk Seal Recovery Team.

One member of the Native Hawaiian Community had a concern that the applicant has not endeavored to apply the Cultural Working Group’s suggestion that focus of the applicant’s research program be redirected on saving the Hawaiian monk seal instead of killing the Galapagos sharks. The applicant has not addressed non-lethal options such as

trans-relocation of Hawaiian monk seals to enhance female reproductive potential, habitat restoration, and the possibility of closing the dredged channel.

Additionally the Native Hawaiian reviewers request that any sharks that are selectively killed should follow Hawaiian cultural protocols of taking and gathering natural resources.

RESPONSE:

DAR staff concurs with the recommendations of the scientific community that this permit application be **disapproved**.

FINAL STAFF RECOMMENDATIONS:

DAR staff is of the opinion that Applicant has not properly demonstrated valid justifications for his application and therefore should not be allowed to enter the NWHI State waters to conduct the activities therein as specified in the permit application.

RECOMMENDATION:

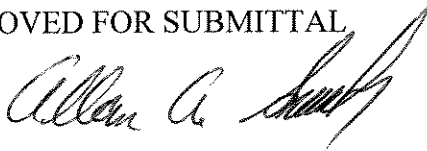
"That the Board disapprove the issuance of a Papahānaumokuākea Marine National Monument Research Permit to Dr. George Antonelis."

Respectfully submitted,



DAN POLHEMUS
Administrator

APPROVED FOR SUBMITTAL



ALLAN A. SMITH
Interim Chairperson

Northwestern Hawaiian Islands Marine National Monument Permit Application

NOTE: *This Permit Application (and associated Instructions) are for activities to be conducted in the Northwestern Hawaiian Islands Marine National Monument, including Hawaiian Islands National Wildlife Refuge, the Midway Atoll National Wildlife Refuge, Battle of Midway National Memorial, Northwestern Hawaiian Islands State Marine Refuge, Kure Atoll Hawaii State Seabird Sanctuary, and the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve. The Co-Trustees are required to determine that issuing the requested permit is compatible with the findings of Presidential Proclamation 8031. Within this Application, please provide all information that you believe will assist the Co-Trustees in determining how your proposed activities are compatible with the conservation and management of the natural, historical and cultural resources of the NWHI Marine National Monument (Monument).*

Summary Information

Applicant name:

National Marine Fisheries Service, Pacific Islands Fisheries Science Center

Permit categories:

- ☒ Research – Please fill out Sections A-D (as applicable) and Appendix A
- ☒ Conservation and Management - Please fill out Sections A-D (as applicable) and Appendix A
- ☐ Education - Please fill out Sections A-D (as applicable) and Appendix B
- ☐ Native Hawaiian Practices - Please fill out Sections A-D (as applicable) and Appendix C
- ☐ Recreation (Midway ONLY) - Please fill out Sections A-D (as applicable) and Appendix D
- ☐ Special Ocean Use - Please fill out Sections A-D (as applicable) and Appendix E

Briefly describe permit activity:

Conduct observational and removal activities for Galapagos sharks preying on Hawaiian monk seal pups at French Frigate Shoals.

- ☒ This application is for a RENEWAL of an existing permitted project.
- ☐ This application is for a NEW project.

When will the activity take place?

From: June 15, 2007 To: Sept 5, 2007

NOTE: INCOMPLETE APPLICATIONS WILL NOT BE CONSIDERED

Please Send Permit Applications to:

NWHI Marine National Monument Permit Coordinator

6600 Kalaniana'ole Hwy. # 300

Honolulu, HI 96825

nwhipermmit@noaa.gov

PHONE: (808) 397-2660 FAX: (808) 397-2662

NWHI Monument Permit Application

OMB Control # 0648-0548

Page 2 of 22

**NOTE: SUBMITTAL VIA ELECTRONIC MAIL IS PREFERRED BUT NOT
REQUIRED. FOR ADDITIONAL SUBMITTAL INSTRUCTIONS, PLEASE SEE PG 7.**

Section A - Applicant Information

1. Applicant

Name (last, first, middle initial): Antonelis, George A.

Title: Chief, Protected Species Division

2. Mailing address (street/P.O. box, city, state, country, zip):

National Marine Fisheries Service
Pacific Islands Fisheries Science Center
2570 Dole Street
Honolulu, HI 96822

Phone: 808/983-5710

Fax: 808/983-2902

Email: Bud.Antonelis@noaa.gov

For students, major professor's name, telephone and email address:

3. Affiliation (institution/agency/organization directly related to the proposed project):

NOAA, NMFS
Pacific Islands Fisheries Science Center (PIFSC)
Protected Species Division (PSD)

4. Additional persons to be covered by permit:

John Henderson, PIFSC, John.R.Henderson@noaa.gov; 983-5712
Robert Dollar, PIFSC, Robert.Dollar@noaa.gov, 983-3702
Shawn Farry, PIFSC Contractor; farrysc@hotmail.com
Paula von Weller, PIFSC Contractor; eibeads@yahoo.com
Mark Sullivan, PIFSC Contractor; marksull@hawaii.edu
Chad Yoshinaga, PIFSC, Chad.Yoshinaga@noaa.gov

Section B: Project Information

5a. Project location(s):

- | | | |
|---|--|--------------------------------------|
| <input type="checkbox"/> Nihoa Island | <input type="checkbox"/> Land-based | <input type="checkbox"/> Ocean-based |
| <input type="checkbox"/> Necker Island (Mokumanamana) | <input type="checkbox"/> Land-based | <input type="checkbox"/> Ocean-based |
| <input checked="" type="checkbox"/> French Frigate Shoals | <input checked="" type="checkbox"/> Land-based | <input type="checkbox"/> Ocean-based |
| <input type="checkbox"/> Gardner Pinnacles | <input type="checkbox"/> Land-based | <input type="checkbox"/> Ocean-based |
| <input type="checkbox"/> Maro Reef | | |
| <input type="checkbox"/> Laysan Island | <input type="checkbox"/> Land-based | <input type="checkbox"/> Ocean-based |
| <input type="checkbox"/> Lisianski Island, Neva Shoal | <input type="checkbox"/> Land-based | <input type="checkbox"/> Ocean-based |
| <input type="checkbox"/> Pearl and Hermes Atoll | <input type="checkbox"/> Land-based | <input type="checkbox"/> Ocean-based |
| <input type="checkbox"/> Midway Atoll | <input type="checkbox"/> Land-based | <input type="checkbox"/> Ocean-based |
| <input type="checkbox"/> Kure Atoll | <input type="checkbox"/> Land-based | <input type="checkbox"/> Ocean-based |
| <input type="checkbox"/> Other | | |

NOTE: Please note there is a fee schedule for people visiting Midway Atoll National Wildlife Refuge via vessel and aircraft.

Location Description:

Vicinity of Trig and Whaleskate Islands and/or other islets within FFS where predatory Galapagos shark activity is detected

5b. Check all applicable regulated activities proposed to be conducted in the Monument:

- ☒ Removing, moving, taking, harvesting, possessing, injuring, disturbing, or damaging any living or nonliving monument resource
- ☐ Drilling into, dredging, or otherwise altering the submerged lands other than by anchoring a vessel; or constructing, placing, or abandoning any structure, material, or other matter on the submerged lands
- ☒ Anchoring a vessel
- ☐ Deserting a vessel aground, at anchor, or adrift
- ☐ Discharging or depositing any material or matter into the monument
- ☐ Touching coral, living or dead
- ☒ Possessing fishing gear except when stowed and not available for immediate use during passage without interruption through the monument
- ☒ Attracting any living monument resource
- ☐ Sustenance fishing (Federal waters only, outside of Special Preservation Areas, Ecological Reserves and Special Management Areas)
- ☐ Subsistence fishing (State waters only)
- ☐ Swimming, snorkeling, or closed or open circuit SCUBA diving within any Special Preservation Area or Midway Atoll Special Management Area

6. Purpose/Need/Scope *State purpose of proposed activities:*

Recent studies have shown that shark predation has been a significant factor contributing to early pup mortality at FFS, particularly at Trig Island. A significant number of pup deaths or disappearances related to shark predation have been either directly observed or inferred from previous events associated with shark predation on pups. Intense predation on preweaned pups was first detected at Trig and neighboring Whaleskate Island in the late 1990s, when 18-28 mortalities were documented each year from 1997-99. This equated to 38-69% of the annual cohort born at those sites. Atoll-wide, there have been 8-12 shark predation losses each of the last 5 years, equating to 15-37% of the annual cohort born at FFS. Last year (2006), 8 of the 39 pups born at FFS were believed lost due to shark predation. Seven additional pups disappeared at FFS in 2006, but evidence was insufficient to reliably attribute those losses to shark predation. This predation on pre-weaned pups is believed to involve a small number of persistent predators that first adopted the behavior after being attracted to the site by unusually high numbers of pup carcasses associated with two years of adult male seal aggression at Trig.

These high predation rates are incompatible with monk seal recovery at FFS, where a decrease in annual cohort size is predicted from an aging population. The proposed activities will include monitoring of shark activity at sites where predation is detected or suspected, and removal of predatory Galapagos sharks using a variation of bottom longline gear modified to fish for sharks from a small boat.

7. As explained further in the instructions, please provide any information that you believe will assist the Co-Trustees in determining how your proposed activities are compatible with the conservation and management of the natural, historical and cultural resources of the Monument:

The Papahānaumokuākea Marine National Monument is home to approximately 94% of the entire population of endangered Hawaiian monk seals (Carretta et al. 2006). Research towards recovery of the species is mandated by the Marine Mammal Protection Act and the Endangered Species Act. Specific to the findings in the Presidential Proclamation, the following apply.

- a. The activity can be conducted with adequate safeguards for the resources and ecological integrity of the Monument; The PSD has assessed Hawaiian monk seal subpopulations in the NWHI annually since 1982. PSD has been monitoring shark predation on monk seal pups since 1997 and has conducted shark removals since 2000 (total of 12 Galapagos sharks removed from 2000-2006). Through these investigations, PSD has acquired the necessary expertise for conducting shark removals while also demonstrating a sensitivity to all other Refuge resources and procedures. Possible adverse effects on the coral reef ecosystem at FFS from shark removals were investigated using the EcoSim model (Parrish unpublished data 2005). Results from that work indicated that the removal of 20 sharks (the initial number permitted in the EA) had a nearly imperceptible effect on the dynamics of the ecosystem.
- b. The activity will be conducted in a manner compatible with the management direction of this proclamation, considering the extent to which the conduct of the activity may diminish or enhance Monument resources, qualities, and ecological integrity, any indirect, secondary, or cumulative effects of the activity, and the duration of such effects; The Hawaiian monk seal is one of the keystone species within the Monument and activities that contribute to the monk seals recovery are compatible with the objectives set forth in the Proclamation. Effects from the removal of a limited number of the abundant Galapagos shark will be ephemeral and are not likely to have serious effects on ecosystem functioning. In contrast, failure to mitigate for the high predation rate (15-21% of the annual monk seal births) will have major effects on the likelihood of monk seal recovery at FFS. Mitigation for shark predation at FFS is also consistent with goal 6.b. of the U.S. Fish & Wildlife Service, National Wildlife Refuge System: "Conserve, restore where appropriate, and enhance all species of fish, wildlife, and plants that are endangered or threatened with becoming endangered."
- c. There is no practicable alternative to conducting the activity within the Monument; Other, non-lethal, mitigation measures (including physical, electrical, and chemical deterrents) have been and will continue to be investigated. However, at this time no other practicable mitigation measures have been identified to reduce Galapagos shark predation on monk seals. In the nearly 10 years since this problem was first recognized, approximately 143 pups have been lost to shark predation (including both confirmed and inferred losses). The consequences of deferring action on this major mortality factor, in terms of the reduced potential for monk seal recovery, are large. Moreover, the predation by Galapagos sharks occurs solely at FFS, so there is no alternative to conducting the activity within the Monument.

d. The end value of the activity outweighs its adverse impacts on Monument resources, qualities, and ecological integrity; As noted in the preceding two findings, the positive outcomes from enhanced monk seal recovery potential outweigh any adverse impacts associated with the loss of a limited number of Galapagos sharks. We do not believe that other, secondary, impacts are likely to result from the removal because Galapagos sharks and other apex predators are relatively abundant compared to monk seals.

e. The duration of the activity is no longer than necessary to achieve its stated purpose; The activity will not commence until and unless shark predation becomes evident, and historically this has commenced in June and continued through the end of July. The extended duration (through early September), is a contingency in case shark predation persists later than usual, and also takes advantage of planned NOAA cruise schedules for transport of personnel. Terminating the project earlier than September will require additional charter flights to transfer personnel, which USFWS seeks to avoid during months of high seabird activity.

An Environmental Assessment for the proposed experimental removal of Galapagos sharks at Trig Island was completed in 2002 (NMFS 2002). The project has not proceeded as originally conceived, due largely to the fact that predating sharks modified their behavior patterns, so as to be more wary of human activity and gear, to a degree not anticipated when the EA was drafted. Despite the intensive fishing effort by highly skilled personnel, less than one-third of the 40 sharks permitted in the EA have been removed. The project, as realized, incorporates elements of both Alternatives 1 (removals) and 2 (harassment) of the EA, with the latter element largely an artifact of inefficient removal methods. Nonetheless, the reduction in predation losses at Trig Island (50-70% as compared to the 1997-1999 levels) is likely a result, in whole or in part, of the ongoing shark removals and the harassment that accompanies shark observation and fishing.

The removal methods used in previous years (handline fishing and hand-held harpoon) have been inadequate to achieve the objectives outlined in the EA. Using only those methods, the program is most likely to moderate rather than alleviate predation intensity, thereby becoming an ongoing "maintenance" effort for monk seal conservation at FFS. Alternatively, using the revised catch methods described in this proposal, we hope to convert the removals into an intensive short-term mitigation measure. We believe that using more efficient removal methods (variation of bottomset gear modified to fish for sharks from a small boat, as described in this application) will enable us to remove most or all of the remaining predators quickly so that pup predation by Galapagos sharks is eliminated or reduced to a level more conducive to monk seal recovery.

f. The applicant is qualified to conduct and complete the activity and mitigate any potential impacts resulting from its conduct; The PSD at PIFSC has conducted field assessments of monk seals in the NWHI annually since 1982, and is recognized as being central to Hawaiian monk seal research. PSD has been engaged in shark monitoring and shark removals at FFS since 1998 and 2000, respectively. PSD has individuals on-staff with many years of experience and advanced expertise in shark fishing methods, gear selection, and relevant technology to minimize the risk of by-catch or other adverse effects from the proposed operation. The lead researcher in the project, Mr. Robert Dollar, has over 10 years' experience conducting shark research using the same or similar methods. We also have consulted, and will continue to consult, with other individuals, both in the scientific and private communities, having expertise in shark fishing methods. These consultations shall include Native Hawaiian cultural practitioners familiar with traditional fishing methods.

g. The applicant has adequate financial resources available to conduct and complete the activity and mitigate any potential impacts resulting from its conduct; The PSD has annually received funding adequate to perform the activity, and anticipates that 2007 funding levels will continue to suffice. If additional funds are required to mitigate any unexpected impact, resources would be available from PIFSC or NMFS Office of Protected Resources.

h. The methods and procedures proposed by the applicant are appropriate to achieve the proposed activity's goals in relation to their impacts to Monument resources, qualities, and ecological integrity; As noted in item f, the preferred fishing method to be used for shark removal in 2007 was identified and refined by in-house experts and consultation with individuals outside the PSD. The method to be used is a bottomset method, modified to fish for sharks from a small boat (as described in the Procedures section of this permit application). This method represents our best assessment of the most appropriate technology for catching Galapagos sharks while minimizing other risks. This method may be refined or modified pending input and recommendations from other individuals. Any significant modifications (other than minor gear adjustments) will be submitted for approval prior to implementation. The fishing methods applied in previous years have become largely ineffective, and have been inadequate to achieve the objectives set forth in the 2002 EA.

i. The applicant's vessel has been outfitted with a mobile transceiver unit approved by OLE and complies with the requirements of Presidential Proclamation 8031; The NOAA vessel R/V Oscar Elton Sette has been so equipped.

j. There are no other factors that would make the issuance of a permit for the activity inappropriate. There are no such factors. This project is an extension of a previous project which has undergone extensive review in-house, by members of the Monk Seal Recovery Team, by the USFWS, and, in 2006, by the State of Hawaii.

8. Procedures:

This project encompasses two main components: 1) shark observation/monitoring and 2) shark removals. Shark observations will be conducted in the same manner as in previous years.

A. Shark Observation/Monitoring

In this description, the "shark team" refers to those individuals designated or hired by NMFS with the primary responsibility for shark observation and removal. Other PSD monk seal population assessment personnel may assist with shark-related tasks on a limited basis if necessary and available.

1. Time Scan Sampling: In 2000, NMFS developed a standardized system for collecting and recording quantitative and behavioral data on sharks exhibiting predatory behavior toward monk seal pups. This system, called "time scan sampling" will be used on a limited basis in 2007 because most patrolling and predation by Galapagos sharks now occurs at night. Time scan sampling may be initiated under the following conditions: 1) a major recrudescence of shark activity at Trig Island occurs (as detected by excessive pup losses or direct observations of patrolling sharks), 2) personnel are available to conduct the observations, and 3) determination by NMFS that significant new findings (in terms of our understanding of the shark/seal dynamic) are likely to accrue from an intensified shark monitoring effort.

2. Overnight camping: Should the level of shark activity or predation losses increase at Trig Island, East Island, or the Gins, NMFS staff may request permission for overnight camping (single nights only) in order to collect information during dawn/dusk periods. During overnight observations, the shark monitoring team may employ night-vision goggles to enable observations in low-light conditions (nocturnal and pre-dawn hours).

3. Trig Island Monitoring: Monk seal population assessment personnel will continue to visit Trig Island on a daily or near-daily basis so that missing pups, shark-injured pups, or elevated shark activity will be immediately detected. If sharks are observed, monitoring intensity will be immediately increased to evaluate the predation risk.

4. Shark monitoring without fishing: Once shark activity and/or shark predation has been documented at an islet, the shark team (or the monk seal assessment team) may periodically visit the islet to conduct shark monitoring observations (separate from any fishing effort that may occur in the same environs). This monitoring will be primarily conducted from the boat to ensure that no seals, turtles, or other species will be disturbed by the monitoring activities. Shore-based observations may be authorized by the NMFS camp leader on larger islets such as the Gins. Shark observational data will be collected using the protocols established at Trig Island, 2001-2003 and adapted for Round Island in 2003.

5. Criteria for classifying shark predatory behavior will conform to the previously established guidelines. During the period when shark observations are underway (including while bait is in the water), shark activity will be coded using the following categories:

- Code 1: Cruising, remains in water >2m depth and shows no behavior directed towards monk seal pups; no obvious signs of predatory behavior.
- Code 2: Patrolling, repeated passes in water less than/equal to 2m depth; apparently hunting pups.
- Code 3: Makes directed approach to seal
- Code 4: Charges seal, clearly attempts to attack
- Code 5: Injures or kills pup

B. Shark Fishing/Removals

1. Fishing personnel: Two or three persons experienced in safe and effective methods for shark fishing/removal will be assigned to the monk seal program at FFS in 2007. The primary responsibility of these persons will be shark observations and shark removals, however they may participate in population assessment tasks when not engaged in shark project operations.

2. Location: Shark fishing and removals will be conducted primarily at those locations previously identified or suspected of having the greatest likelihood of catching predatory Galapagos sharks. Probable sites include: reef channels surrounding Trig Island; channels between Tern and Trig Island; and nearshore waters surrounding Round Island. Similar sites may be identified in the vicinity of the Gins.

3. Predation alert protocol: All personnel engaged in monk seal population assessment at FFS will be alert for evidence of shark predation at any site within the atoll. If Galapagos sharks are observed displaying predatory behaviors, they will immediately notify the shark fishing team and will begin collecting observational data using the protocols established at Trig Island, 2001-2003 and adapted for Round Island in 2003 (approved by FWS on June 4, 2003). They will remain on site whenever possible until the fishing team has arrived (contingent upon other duties).

4. Shark monitoring during fishing operations: When the shark team is dispatched to a site to conduct fishing, all shark activity will be recorded using the same system (time scan sampling) as that used for regular shark observations.

5. Gear and Fishing Method: The primary method to be used will be a bottomset method modified to fish for sharks from a small boat. A weighted longline about 100 feet long on the seabed where there are openings in the reef adjacent to Trig Island <60 ft in depth. The bottom gear used for this project will be a heavier gauge than pelagic gear, and will consist of a heavy monofilament mainline with lighter weight monofilament gangions attached about 10 feet apart. A flexible 1/16" wire rope will be used as a short leader above each #14 hook when fishing for sharks. Lightsticks, rattles, or other devices are not used in this type of fishing. The weighted monofilament longline will consist of up to 5 hooks baited with small tunas or mackerel. Circle hooks will be used. Because we will cease activity for evaluation after 5 sharks are caught (see item 10, below), no more than 5 hooks will be deployed at any time. Moreover, the number of hooks will be reduced as sharks are caught, to ensure we do not inadvertently catch more than we are authorized.

If a monofilament bottomline proves to cause problems with, e.g. drifting into coral structured areas, causing chafing or wear on the line or damage to coral, we may switch the bottomline from monofilament to another material, such as polypropylene, bloodline (a thin braided line made of synthetic line, commonly used in bottomfishing), or tarred OPI nylon mainline to alleviate the problem.

The gear will be deployed and retrieved by hand from a small boat (e.g., 18 ft Boston Whaler), and will be allowed to soak overnight, but will be checked at least every 4 hours during daylight hours. Overnight soaking is necessary to accomplish the aims of the project, because shark fishing is more successful at night. A marker device consisting of a buoy with a flag and/or light will designate each end of the gear and will be connected to the monofilament mainline using a 1/2" diameter polypropylene buoy line. A brummel hook or similar type snap-on hook will be used to connect the buoy to each terminal end of the gear and then anchored to the seabed with a mushroom type anchor or other anchoring device depending on the type of seafloor substrate. In no instances will any anchors be placed in living coral areas; we plan to deploy on sand or coral rubble bottom. Measures to prevent seal and turtle entanglement in the buoy line will include shielding of the buoy line with segments of PVC pipe, or modification of the shape of the float buoy to add a rubber, tapered extension, a recent development to prevent cetacean and pinniped entanglement in float buoys. Any entanglement or injury of a monk seal or sea turtle by the equipment will result in immediate cessation of fishing, pending review of methodology.

The bottomset method described here represents our best assessment of the most appropriate technology for catching Galapagos sharks while minimizing other risks. This method may be refined or modified pending input and recommendations from other individuals. Any significant modifications (other than minor gear adjustments) will be submitted for approval prior to implementation.

Secondary fishing method: If sharks become less wary of human presence, we may reinstitute fishing methods authorized in 2006 and prior years. Those methods proved unsuccessful in recent years because human presence caused sharks to avoid the bait and/or the fishing area. These methods include a single baited hook deployed from shore, a speargun shot from shore or the whaler, or a harpoon gun shot from shore.

6. Post-catch procedures: Sharks will be brought to the whaler and euthanized with a .44 caliber bangstick. Fishing gear will be pulled and not redeployed until after necropsy is complete. The carcass will be taken to Tern Island for necropsy, which will be conducted in a location where blood and other remains will not enter the water. After all samples and data have been collected, shark carcasses will be discarded at the closest deep water location outside of the refuge.

7. Native Hawaiian Practices and Participation: Hawaiian cultural protocols, based on extensive practitioner input, will be included in all shark removal efforts. NMFS has conducted numerous group and individual meetings with native Hawaiian cultural practitioners and advisers to incorporate appropriate actions into proposed activities and to ensure that shark removal and disposal of the remains are in keeping with Hawaiian cultural practices. Ongoing consultation with Hawaiian practitioners will advise fishing personnel on traditional fishing techniques and potential for an on-site practitioner to conduct activities, including the collection of shark parts for cultural use.

(remains to be determined). If a Hawaiian practitioner is on site, his/her observational activities related to shark removal efforts and monk seal population assessment will be in accordance to the guidelines outlined in existing permits from NMFS and the Monument. NMFS has also added a native Hawaiian as a member of the Hawaiian Monk Seal Recovery Team to improve cultural components of all Hawaiian Monk seal recovery efforts.

8. Fishing effort and post-removal reports: As agreed upon by FWS and NMFS (August 18, 2001), information concerning the removal of each shark will include environmental conditions at the time of removal, criteria used to determine the shark targeted for removal, identifying tags and physical features of the shark removed, history of previous shark sightings, removal methodology, and method of euthanasia. Information collected from each shark carcass will include morphometric measurements, genetic samples, stomach contents, and reproductive status. Tissue samples from sharks will be analyzed to quantify compounds of potential concern at acceptable detection limits to include total metals, polychlorinated biphenyls, organochlorine pesticides, percent lipid and moisture, and fatty acid analysis for possible detection of monk seal consumption. Upon request, teeth and ventral (belly) skin will be retained and made available for cultural purposes.

9. Shark activity reports: Throughout the season, periodic shark activity updates will be submitted for agency review, and will provide (at a minimum) the following information:

- Number of pups born and currently present at each islet
- Date and location of shark related pup injuries, deaths and disappearances at all sites;
- Summary of observed shark activity at each site
- Date, time and method of removal for each shark collected
- Biological data collected from all sharks removed;
- Any other information pertinent to the ongoing evaluation of this project

10. Number of sharks: This application requests lethal take of up to 10 Galapagos sharks. Additional removals may be requested if continued mitigation is considered necessary. Galapagos sharks will be removed in increments of five using the techniques described above. After the removal of the fifth Galapagos shark, a field report of research activities and removal efforts will be provided to a joint USFWS/NMFS review panel to determine if the culling activity should cease. The review panel will be given up to two days to review the information and make a determination. The decision to continue removing sharks will be based on an evaluation of the possible impacts to other wildlife (e.g., turtles), compliance with the terms of the permit, and the report of activities supplied by field personnel.

11. Non-target species: Any species other than Galapagos sharks which are caught as part of this project will be released immediately. These may include tiger sharks, reef sharks, or other top predators such as ulua. We anticipate that bycatch will be minimal, as the hooks should be too large to catch small reef sharks or ulua, and will be small enough to be bent (straightened) by large tiger sharks. Moreover, circle hooks which will be used are less prone to accidentally snag non-target animals. Nonetheless, USFWS Refuge personnel will be immediately notified if any non-targeted species die during fishing.

12. Evaluation: The goal of the project is a reduction in shark-related pup mortality at French Frigate Shoals, with particular emphasis at Trig Island. We will consider the activity to have been successful if such pup mortality drops from 2006 levels.

Section C: Logistics

9. Other permits (list and attach documentation of all other related Federal or State permits):

Incidental disturbance of Hawaiian monk seals during all monitoring and shark fishing activities is authorized under Scientific Research and Enhancement Permit 848-1695-02, as attached.

9a. For each of the permits listed, please identify any permit violations or any permit that was suspended, amended, modified or revoked for cause. Please explain the circumstances surrounding the violation or permit suspension, amendment, modification or revocation.

The Scientific Research and Enhancement permit specified above represents a twice modified version of the original permit. Modifications were granted to change certain geographic locations of take, and to add a monk seal captive care component.

10. Funding sources (Please attach copies of your budget, specific to proposed activities under this permit and include funding sources. Please see instructions for more information):

All funding is provided by NOAA, NMFS.

11. Time frame:

Activity start: June 15, 2007

Activity completion: September 5, 2007

Dates actively inside the Monument:

From: June 15, 2007

To: September 5, 2007

Please describe any limiting factors in declaring specific dates of the proposed activity at the time of application:

Timing of project initiation is contingent on the availability of the qualified personnel, acquisition of all necessary gear, and schedules of deployment vessels (boat or plane). Initiation of fishing operations may also be delayed to coincide with the first observations of predatory sharks or monk seal injuries.

Personnel schedule in the Monument:

June 15, 2007-Robert Dollar and 1 or 2 TBN arrive via chartered aircraft.

September 5, 2007-all personnel depart via O.E. Sette

Other personnel may rotate during the project

12. Please indicate (with attached documentation) what insurance policies, bonding coverage, and/or financial resources are in place to pay for or reimburse the Monument trustees for the necessary search and rescue, evacuation, and/or removal of any or all persons covered by the permit from the Monument:

All personnel are covered by workers compensation, either as contractors or as federal employees. The National Marine Fisheries Service has the financial resources to cover costs attendant to evacuation or search and rescue as necessary.

13. Please check the appropriate box to indicate how personnel will enter the Monument:

- ☒ Vessel
☒ Aircraft

Provide Vessel and Aircraft information:

Vessel transportation will be provided by the NOAA R/V Oscar Elton Sette. Aircraft transportation will be via aircraft chartered by the USFWS Office of Aircraft Services (presently a Piper Aztec to French Frigate Shoals).

14. What certifications/inspections do you have scheduled for your vessel? Please fill in scheduled date (attach documentation):

- ☐ Rodent free, Date:
- ☒ Tender vessel, Date:
- ☐ Ballast water, Date:
- ☐ Gear/equipment, Date:
- ☒ Hull inspection, Date:

15. Vessel information (NOTE: if you are traveling aboard a National Oceanic and Atmospheric Administration vessel, skip this question):

Vessel name:

Vessel owner:

Captain's name:

IMO#:

Vessel ID#:

Flag:

Vessel type:

Call sign:

Embarkation port:

Last port vessel will have been at prior to this embarkation:

Length:

Gross tonnage:

Total ballast water capacity volume (m3):

Total number of ballast water tanks on ship:

Total fuel capacity:

Total number of fuel tanks on ship:

Marine Sanitation Device:

Type :

How will you comply with the 'No Discharge' regulations stipulated in Presidential Proclamation 8031? Describe in detail. If applicable, please attach schematics of the vessel's discharge and treatment systems:

Other fuel/hazardous materials to be carried on board and amounts:

Please provide proof of a National Oceanic and Atmospheric Administration (NOAA) Office of Law Enforcement-approved Vessel Monitoring System (VMS). Please provide the name and contact information of the contractor responsible for installing the VMS system. Please also describe unit name and type:

VMS Email:

Inmarsat ID#:

16. Tender information:

On what workboats (tenders) will personnel, gear and materials be transported within the Monument? Please list the number of tenders/skiffs aboard and specific types of motors:

Workboats detailed to the O.E. Sette will be used to transport gear and materials between ship and shore. Workboats at French Frigate Shoals include two 20 ft whalers, each with two 4 stroke Honda engines. A third whaler destined to be used at French Frigate Shoals is presently in use at Midway Atoll. This tender will be transported to French Frigate Shoals in May, 2007. These workboats will be shared by monk seal population assessment personnel and the shark project according to needs and availability. The whaler which is presently at Midway Atoll will be transported to Honolulu in early April and will be fully inspected before being taken to FFS in mid-May.

Section D: Additional Information for Land Based Operations

17. Proposed movement of personnel, gear, materials, and, if applicable, samples:

Personnel and equipment will be transported within the atoll by tenders assigned to the monk seal population assessment project, as well as the single tender identified in 16. above. Gear will be transported to and from the atoll by tenders assigned to the O.E. Sette, as well as USFWS at Tern Island.

18. Room and board requirements on island:

Housing will be required at Tern Island for up to 3 people for two and a half months.

19. Work space needs:

A freezer to store bait will be required. Other workspace will be shared with monk seal population assessment staff, so no additional workspace is necessary.

With knowledge of the penalties for false or incomplete statements, as provided by 18 U.S.C. 1001, and for perjury, as provided by 18 U.S.C. 1621, I hereby certify to the best of my abilities under penalty of perjury of that the information I have provided on this application form is true and correct.

Signature

Date

PLEASE SEND ONE SIGNED APPLICATION VIA MAIL TO THE MONUMENT OFFICE BELOW:

NWHI Marine National Monument Permit Coordinator
6600 Kalaniana'ole Hwy. # 300
Honolulu, HI 96825
FAX: (808) 397-2662

DID YOU INCLUDE THESE?

- ☐ Applicant CV/Resume/Biography
- ☐ Electronic and Hard Copy of Application with Signature
- ☐ Map(s) or GPS point(s) of Project Location(s), if applicable
- ☐ Funding Proposal(s)
- ☐ Funding and Award Documentation, if already received
- ☐ Documentation of Insurance, if already received
- ☐ Documentation of Inspections
- ☐ Documentation of all required Federal and State Permits or applications for permits
- ☐ Statement of information you wish to be kept confidential

Appendix A: Research OR Conservation and Management Application

NOTE: If land or marine archeological activities are involved, please contact the Monument Permit Coordinator at the address on the general application form before proceeding, as a customized application will be needed. For more information, please contact the Monument office on the first page of this application.

1a. Collection of specimens - collecting activities (would apply to any activity): organisms or objects (List of species, if applicable, attach additional sheets if necessary):

Common name:

Galapagos shark

Scientific name:

Carcharhinus galapagensis

& size of specimens:

up to 10 individuals of all size categories

Collection location:

FFS

☒ Whole Organism ☐ Partial Organism

1b. What will be done with the specimens after the project has ended?

Necropsies will be performed on-site; Samples will be retained for analysis as specified in 3. below, or for use by native Hawaiian practitioners if so requested.

1c. Will the organisms be kept alive after collection? ☐ Yes ☒ No

• Specific site/location:

Most fishing will occur in the vicinity of Trig Island, specifically with the modified bottom longline set in sandy channels within the reef complex where Galapagos sharks are known to transit. Other fishing may take place in the vicinity of Tern Island, Round Island or Gin/Little Gin Islands, if additional Galapagos shark activity is documented.

• Is it an open or closed system? ☐ Open ☐ Closed

NA

• Is there an outfall? ☐ Yes ☐ No

NA

• Will these organisms be housed with other organisms? If so, what are the other organisms?

NA

• Will organisms be released?

Any non-target species caught during fishing operations will be released as soon as they are caught.



Department of Land and Natural Resources
Northwestern Hawaiian Islands Permit Application Review

Permit Type: Management ☐ Recreation ☐ Research ☒
Education ☐ Cultural ☐ Special Ocean Use ☐

Working Title: Request for Authorization and Approval to Issue a Papahānaumokuākea Marine National Monument Research Permit to Dr. George Antonelis, National Oceanic and Atmospheric Administration (NOAA), Pacific Islands Fisheries Science Center (PIFSC) for Access to State Waters to Conduct Shark Control Activities.

Project Applicant: NOAA/PIFSC **Principal Investigator:** Dr. George Antonelis

Project Location(s) *(Both State Waters and Monument):* French Frigate Shoals

Project Dates and Duration: June 15, 2007 through September 5, 2007

Project Précis & Background *(Summary of project and why this is proposed):*

The proposed activities will include monitoring of shark activity at sites where predation is detected or suspected, and lethal removal of up to ten (10) Galapagos sharks using a variation of bottom longline gear, single hook drumlines set from small boats, and spearing or harpooning from shore.

Are there other relevant permits that have/will be issued with regard to this project? Yes ☐
No ☒

What is the relevance to management and/or the improved understanding of NWHI & MHI?

The proposed activity fails to meet the purposes and goals of management of the NWHI and the Papahānaumokuākea Marine National Monument. Essential information is lacking on the dynamics of shark/pup predation to ensure that such removal has any benefit.

Could work be conducted outside the NWHI?: Yes ☐ No ☒

Explain: The intended effect is to prevent shark predation on monk seals; the majority of the Hawaiian Monk Seal population is found within the NWHI.

Has Applicant been granted a permit from the State in the past? Yes ☒ No ☐

If so, please summarize past permits:

In 2006, Dr. Antonelis was granted permit number DLNR.NWHI06R016 to conduct similar activities.

Have there been any a) violations: Yes ☐ No ☒ **b) late/ incomplete reports:** Yes ☐ No ☒

Any other relevant concerns from previous permits? _____

Recommendations:

DAR Staff: Approve this permit application ☐

Reject this permit application ☒

NH CWG: Approve this permit application ☐

Reject this permit application ☐

Additional Comments:

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